

Abstract

- 5 Optical fiber terminations requiring collimated output from single-mode fibers (SMF) have been accomplished in the past through use of graded index lens (GRIN) technology. ~~GRIN lenses are expensive, difficult to mount and align, require adhesive bonds, and are relatively large compared to the optical fiber diameter.~~ The use of a UV laser refractive index tunable fused multi-mode fiber as a termination collimator provides a more
- 10 compact, durable, inexpensive means of coupling single-mode optical fibers to other components, even those of uneven numerical aperture. Determining the exact length required for proper collimation is avoided by utilizing a laser tuning process to adjust the refractive index of the fiber to produce required collimation.
- 15 This novel composition and method comprises the use of a germanium-doped multi-mode optical fiber as a collimating termination for a single-mode optical fiber. ~~The collimating termination fiber is normally fused to the single-mode fiber.~~ The required length of the multi-mode fiber is estimated prior to fusing to the SMF, and the refractive index is tuned by exposure to UV radiation via a laser to produce full collimation.
- 20 ~~Embodiments of this invention include switching devices using solenoid driven shutters and movable optical prisms.~~

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10 collimation.

This novel composition and method comprises the use of a germanium-doped multi-mode optical fiber as a collimating termination for a single-mode optical fiber. The required length of the multi-mode fiber is estimated prior to fusing to the SMF, and the refractive

15 index is tuned by exposure to UV radiation via a laser to produce full collimation.